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REA

Lineman

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RURAL ELECTRIFICATION NEWS

HANDLING HOT LINE WORK

*By Raymond H. Forkner,
Manager, Upper Cumberland
Membership Corporation,
Carthage, Tenn.*

We, as well as many other REA co-operatives and public power systems, handle most of our rehabilitation and maintenance hot line work. This is partly due to the aid and also to the training of the management that, "The current must stay on" where possible on our 600 miles of line.

Tested rubber goods are used and with proper care and safety no danger should be countered. However, we consider 12 kv. work with hot line tools safer than 2.3 kv. work with rubber goods and allow new employees to work 12 kv. before working 2.3 kv. with rubber goods.

Because all cooperatives will eventually come to hot line work as their load increases and their system ages, a short description of the work may be of interest.

Upper Cumberland acquired 4,046 over-age chestnut poles, most of which are about 100 miles of three phase, four wire 12 kv. number 4 line and the balance in town distribution systems of 2.3 kv. lines, and single phase 6.9 kv. lines. Many of the poles were over-age and had to be replaced. Over 50 percent of our holes are rock. Poles cannot be loaded heavy and two shots are required in most of them. Cedar bushes are piled over the hole and we have only got the line down one time. Care must be taken to tie the battery wire down to keep it out of the line. [Ignition or battery lines should always be run at right angles to a hot line, thereby preventing the ignition line from being thrown up into the hot phase.—Ed.]

Poles are set behind the hole digging new with a winch truck and about fifteen to twenty can be set per day, depending on the line location and provided they are in the same immediate section of the line. We are supplied through two substations, one of which has high speed relaying. On this station special care must be taken to keep from relaying. The ground wire is stapled to pole butt and also temporarily stapled about 12 feet from butt where it is rolled.

A ground rod is screwed into the ground with a continuous cable clamping to the rod and other ends going to the truck body and the pole. A clamp is placed on the pole such as a rope snubbing ring.

If it is a particularly hazardous location, the pole is guided into the hole by link sticks attached to this snubbing ring—otherwise gloves are used by the "swamper" behind the truck. The arms are either set in the line or just outside where 2 pin arms of old construction are encountered. Care must be taken to give more clearance in the span or the new poles will burn during a high wind. Pole setting and transferring are not done by the same crew, or if done by the same crew poles are set one full day. One class of operation at a time means increased efficiency. Some co-operatives rake the old poles. We prefer to rake the new poles as

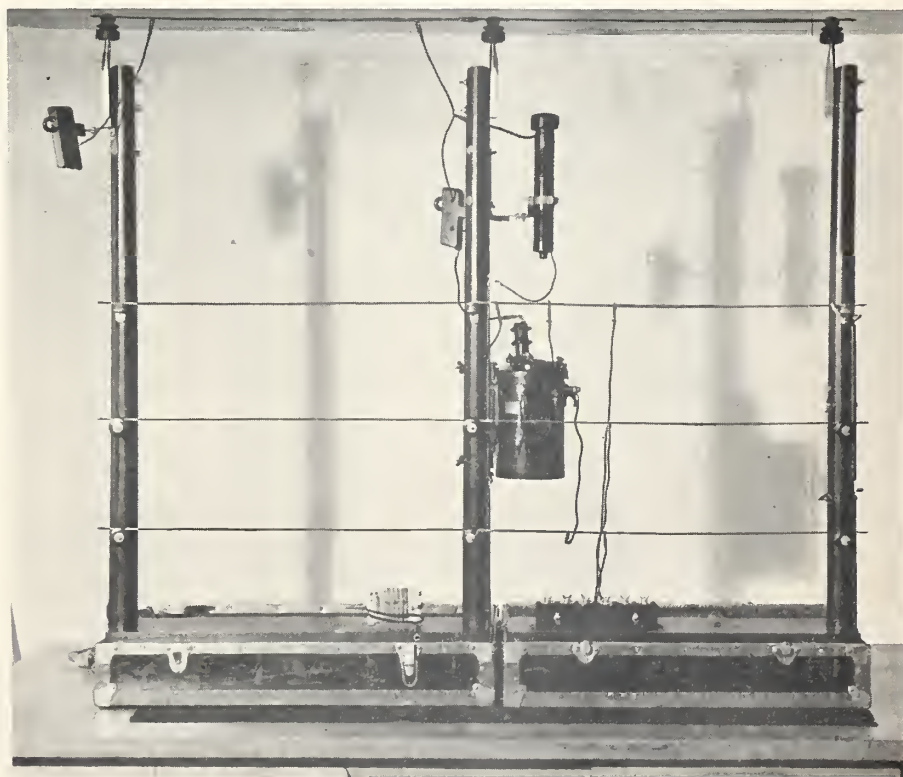
they will stand straightening better than old poles. When poles are ready to be removed they will not stand much working with or the entire line may come down.

A crew of a foreman, two class A linemen, one class B lineman and two groundmen will average four transferred and seven chestnuts removed per day. On our lines, sag, in most cases, on new span lengths will be within tolerances allowed.

All linemen and crews like to do hot line work. It is safe work—with trained crews. We train crews on cold work. The Class B lineman is the number two man down the pole and has an excellent chance to learn before "going higher". One 'A' lineman is number one man on the new pole and the other 'A' lineman unties on the old pole. The lineman on the old pole is partly responsible for safety on that pole.

Last year we worked 43,200 man-hours without a lost time accident. We insist that safety be "the order of the day" on this project.

When buying equipment, the outfit should include two of the two and one-half wire



Here is the miniature power line which Kentucky co-ops used to train linemen in the proper method of handling switching and other operations.

tongs. Linemen may prefer to use the smaller tongs on most work but will find places where a strong pole is indicated and with the 2½ pole they can do about what they please with it.

We prefer individual saddles for each pole. Little more time is required and where the same linemen and groundmen work for some days together the tools go up smoothly and fast.

We made up our set of tools from recommendations by a standard manufacturer. Link sticks are a requisite in any set and the rope should be served to the stick and handled with the same care as the other equipment. While we started with \$400 worth of equipment, we are adding about \$100 per year. In this way we not only absorb the cost gradually, but can add pieces for which we particularly feel the need. No hot line tool carrier could be secured. Therefore a canvas 12 x 14 feet in size is used, with one-foot flaps sewed to the main canvas to wrap each individual stick.

foot on a vine and fell on a stump, lacerating his arm severely below the armpit. When those helping him were unable to locate the proper pressure point, they rushed him to a doctor 25 miles away, and he lost quite a bit of blood enroute. *Tip to co-op crews: learn the pressure points for wound treatment as one of the first fundamentals of first aid, and learn how to handle injuries if unable to locate the pressure points.*

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How is a tree going to fall? Better take the wind into account as well as the angle of the cut. One line foreman didn't, and the falling tree broke a bone in his elbow.

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A broken insulator can do damage to individuals as well as to those getting service from a line. A lineman grabbed an insulator to support himself while removing wire from a discontinued line. The insula-

tor was smashed, and his finger was almost to the bone.

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You can't be too careful about nails truding from lumber. One nail, driven a lineman's foot as he walked on lumber, laid him up for 15 days. A nail stuck in the palm of a man's hand, kept him out four days. *Small things, painful and possibly fatal, if not treated. A bit of caution in handling old wood dispel this danger.*

* * *

When changing out pins with hot tools, a foreman stepped up to remove hand line attached to a bolt in a hole he previously made above the cross-arm. bolt gave way suddenly when he pulled it, and struck the conductor, causing a to go through from one of his hands, the other. *Burns on his hands kept away from work for about a month.*

It Didn't Need To Happen

REA invites line employees and other persons interested in line safety to send in to the News their comments on these accidents as briefly reported here and their suggestions as to how they could have been avoided. Perhaps your suggestion may save the life or time of a fellow co-op employee or other worker.

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Several of the accidents recently reported to REA involved use of climbing irons. As one lineman was about to install a ground wire on a pole, his spurs cut out and he slipped and skidded down the pole, suffering broken ribs, body bruises and strains that kept him away from work for 15 days. While a line foreman was descending a pole, his hooks cut out and he slipped four feet, suffering a painful friction burn. In stepping off a pole, a lineman's helper's climbing iron stuck in his heel, costing him seven days' time. And while a lineman was stapling a ground wire on a pole, his right gaff glanced on one of the nails holding the pole number. This caused the lineman to lose his balance, and he fell in nearly horizontal position to the ground, where his rib struck a stone and he suffered an injury that kept him from work about 20 days.

Assuming that the lineman had been properly instructed in the care and use of climbers, what else could have been done to avoid these accidents?

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While de-energizing a line to repair a break at night, a co-op manager caught his

MEET REA'S SAFETY SUPERVISORS L. A. Ehmsen of Kentucky

"KEEP your shoulder level with the neutral."

That's the line safety slogan adopted by 23 co-ops participating in the Kentucky REA Safety and Job Training Advisory Committee program, under the direction of L. A. Ehmsen.

"If in the future this slogan becomes in-applicable, we feel confident that our men can and will be trained for new types of design and construction," says "Slim" Ehmsen, who started in REA construction work at Davenport, Ia., in 1936. He has been in his Kentucky job since January, 1942, after line and safety work with Ohio co-ops.

Ehmsen's safety job training consists of teaching the men "to do all construction on lines from a safe working position on the pole, regardless of whether the line is energized. A man who can do his work on a live line is well trained and should have very few injuries, if any, on cold line construction," says the tall, lean Kentucky supervisor.

Beside the necessity of taking the proper position on the pole, Kentucky co-op linemen have the rubber glove story drilled into them hard. "Our linemen tend to have a sense of false security concerning rubber gloves. But it is very important that every lineman understand the degree of security that they afford," says Ehmsen.

Kentucky co-ops have recently completed, under Ehmsen's direction, a safety course

in which a miniature line was used to show the proper method of placing protection grounds, switching and installing transformers. Co-op office personnel was also instructed, to enable them to answer correctly members' questions on outages.

Here are some of the other projects planned by the energetic Kentucky supervisor and others of the state's safety workers:

1. A foremen's conference, to be led by representative of the State Department of Education. "Since the foreman is the day-by-day teacher of his men, we feel that the conference will help him materially discharge his teaching duties," says Ehmsen.

A slide film projector owned by the State Safety and Job Training Committee to supplement the miniature line in job training and to show other employees correct work methods.

3. Preparation of the safety manual for all phases of line work for the training of new employees and the upgrading of the more experienced ones. A bulletin, "Tennessee Linemen's Message," carries current information of a training nature.

Kentucky's safety program has found wide support from the REA co-ops. "Many of the boards of directors have attended safety meetings, and their interest and sincere cooperation is a big morale builder for the employees," says "Slim" Ehmsen.